CONDITIONS AND INSECT CONTROL RECOMMENDATIONS

BADGER UNIT, SEASON OF 1932

by

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Pickering
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The nine half-section plots cruised in this unit form the basis for estimates of 1932 losses, and provide as well a means of judging the effectiveness of the 1931 Pickering control operations.

The infestations of past years have taken considerable toll of the pure ponderosa pine stands in this unit. The unit, which covers about 88,000 acres and bore an original stand of about 14,000 b.m. per acre (J.R. Berry and B.O. Hughes, Report on Western Pine Beetle Situation and Appraisal of Timber Values in the Badger Springs Unit, Modoc National Forest, 1928) in the better-timbered areas, or a total estimated stand of about 880,000 m.b.m., suffered losses from 1921 to 1930 inclusive as follows:

1921 - - - -	11,140 m.b.m.
1922- - - - -	6,421
1923 - - - -	3,080
1924- - - - -	4,710
1925 - - - -	12,240
1926- - - -	28,350
1927 - - - -	89,600
1928- - - -	60,400
1929 - - - -	6,140
1930- - - -	6,960

Thus, during the period of 1921-1930, a total of 229,041 m.b.m. was infested by insects, a loss of about 26 per cent of the stand occurred, and destruction of timber to the value of about $687,220 was suffered if stumpage is considered worth $3.00 per m.b.m.

Estimates of losses on the plots cruised in the fall of 1931 were lower than the actual losses that occurred. This may be considered typical of arbitrary estimates of a rapidly rising infestation. In 1931 it was evident that another epidemic cycle of infestation was beginning, and subsequent work has confirmed this. The residue of the stand, about 660,000 m.b.m., on the unit suffered a loss during that year of about 2.45 per cent, or 16,170 m.b.m. All information collected during the 1932 cruise points to a continuance of the epidemic conditions of 1931, with marked increases in the 1932 losses. Estimates for 1932 indicate losses estimated at about 24,480 m.b.m., or 3.8 per cent of the stand remaining at the end of the 1931 season. Thus, by the end of the 1932 season over 30 per cent of the stand originally on the area in 1921 will have been destroyed by insects.

There is no certainty that the heavy losses suffered during 1932 will continue during the 1933 season; but it is justifiable to predict that heavier losses will be caused by the summer broods of 1933, on the basis that the impetus of the infestation cannot subside until a large proportion of the immense beetle population now in the area has been absorbed or killed. This mortality can only be caused either by an improbable reduction of the 1932 winter brood, due to extremely high mortality between now and spring, or by a possible mortality accompanying attacks of the 1933 summer broods under unfavorable conditions. The former is an improbability, due to the vigorous and healthy condition in which the winter broods are found, and the latter is only a possibility. In the past the area has suffered from similar infestations that have run their course in about four years. It is possible that the present epidemic infestations will continue as epidemic for several years. In such an event, with over 30 per cent of the original stand already destroyed, such a cycle and its attendant losses would reduce the values to a point where the margin between profit and loss in harvesting the timber would be slight.

There are three definite zones of infestation in the Badger Unit. The largest zone, on which losses run from 4 to 5 per cent of the residual stand, includes practically all the unit except those portions treated during the winter of 1931 in the Pickering Control Project, the results of which will be discussed in a supplementary memorandum. The second zone, which has an infestation of from 3 to 4 per cent of the residual stand now present on the area, lies in the northeastern portion of the control area. It is an area in which a less satisfactory retardation of epidemic tendencies was secured. The third zone includes the greater portion of the controlled area, including for the most part the central portion of the area, in which the infestation was held to about the level of the 1931 infestation and in which reinfestation from outside areas did not occur. These zones are indicated on the map accompanying this report.

Conditions of infestation in all three zones are unstable, for factors favoring epidemic tendencies are operative throughout the entire Badger Unit. For this reason the following recommendations are suggested. They are offered under four different plans to meet the pressure of economic conditions, should these and not entomological considerations be the deciding factors in determining the course of action to be followed this season.

Plan 1. Maintenance control of area treated in 1931

Acreage - 19,680
Est.no.of trees to be treated - 3,100
Estimated volume - 2,945 m.b.m.
" cost - $11,780
Ownership and liabilities:
U.S. -12,160 A. - $7,303.60
Pickering Lbr.Co.- 7,520 " - - 4,476.40

This plan would have the following advantages:

a. It would to some extent protect the savings already secured by the 1931 control operation;

b. It would counteract the effects of the factors operating to bring about epidemic conditions.

This plan would have the following disadvantages:

a. The area, surrounded on all sides by heavy epidemic infestation, is of insufficient size to protect adequately the timber within it under conditions of epidemic infestation. Reinfestation, particularly along the western boundary, has already occurred in a belt about a mile in width;

b. The area is not a unit when considered from an entomological standpoint, and even when considerably enlarged, as suggested in 1931--when it was desired merely to reduce the losses in the more heavily-infested areas and prevent the building-up of the infestation--would be of insufficient size to combat the present infestation if natural barriers were not used for boundaries.

Although the following plan (Plan 2) includes an area that might be considered too extensive and too expensive an undertaking, some measure of protection and relief could be secured by following Plan 1, and in addition treating as large a surrounding area as available funds would permit. Particular attention, however, should be paid in this event to the treating of the Red River block of timber west of the area treated in 1931; for this area, in connection with the natural epidemic tendencies, has been the greatest source of reinfestation.

Plan 2. Maintenance control of area treated in 1931 and treatment of a sufficiently-enlarged supplementary area to insure protection.

Acreage - 53,700
Est.no.of trees to be treated - 12,450
Estimated volume - 11,827 m.b.m.
" cost - $47,000
Ownership and liabilities:

U.S.- - - - - - - -	-29,780 A. -	$26,038.00
Pickering Lbr.Co.-	19,360 " - -	16,967.00
Red River " " -	4,120 " -	3,619.00
Miscellaneous owners-	440 " - -	376.00

This plan would have the following advantages:

a. It would provide for retention of values already saved in the 1931 control area;

b. It would provide protection for that area and prevent further reinfestation;

c. It would combat the heavy epidemic infestation in the surrounding areas and retard subsequent heavy losses;

d. It would have natural entomological boundaries except along the southern boundary.

This plan would have the following disadvantages:

a. It would ignore the heavy losses and epidemic infestation existent in lands to the south and west of the area selected;

b. It would not prevent reinfestation from untreated areas to the south and west.

Plan 3. Control of the Badger Unit

Acreage - 88,060 A.
Est.no.trees to be treated - 15,450
Estimated volume - 14,670 m.b.m.
" cost - ~~$58,680~~ 59,5
Ownership and liabilities:
U.S.- - - - - - - - - - 41,220 A. - ~~$27,462.24~~ 27,470 60
Pickering Lbr.Co.- - -40,920 " - - ~~27,227.24~~ 27,220.00
Red River " " - - 4,280 " - ~~2,875.32~~ 2,875.00
Miscellaneous owners - 1,640 " - - 1,114.92 1,115 00

This plan would have the following advantages:

a. It would combat the epidemic infestations in all parts of the unit, which would mean practically all parts of the sale area;

b. It would have boundaries sufficiently protected from reinfestation.

This plan would have the following disadvantages:

a. It would be an extremely large project.

Plan 4. Do no control work.

This plan would sacrifice present values and rely on the fact that the present epidemic might stop before the values represented by the stand are reduced below the merchantable level. This action would be a gamble and is not based on the facts of the past history of the area.

Map Legend

Boundary of control 1931-32
(also boundary of Plan 1)

Boundary of Control Plan 2

Boundary of Control Plan 3

Infestation:

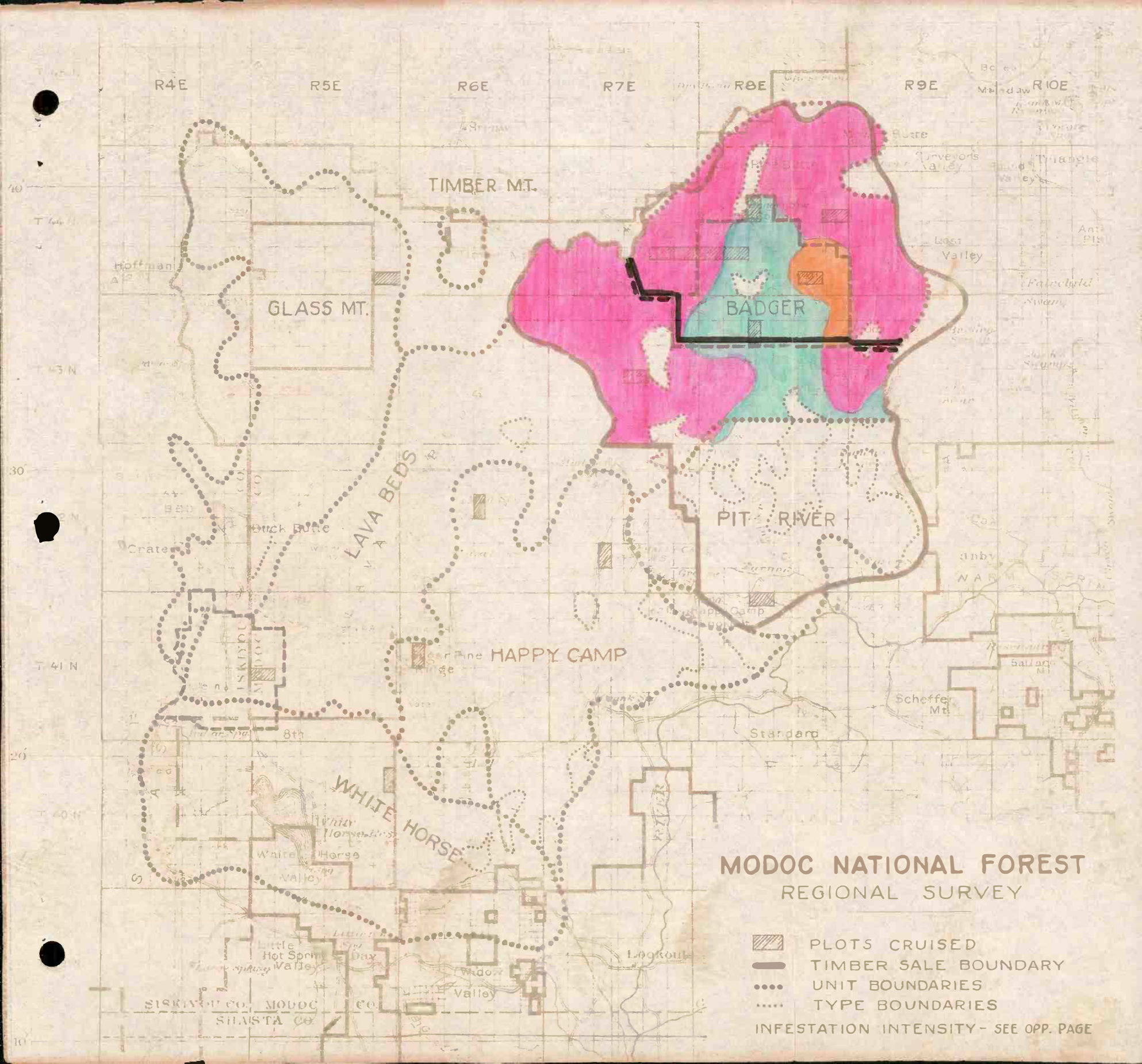
Less than 1% - - - - - -

1. 1-2%- - - - - - - - -

2. 2-3% - - - - - - - - -

3. 3-4%- - - - - - - - -

Over 4%- - - - - - - - -



MODOC NATIONAL FOREST

REGIONAL SURVEY

PLOTS CRUISED

TIMBER SALE BOUNDARY

UNIT BOUNDARIES

TYPE BOUNDARIES

INFESTATION INTENSITY - SEE OPP. PAGE